

DaimlerChrysler AG

Patent Claims

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1. An arrangement of an electrical power generating system in an electrical vehicle which contains at least one electrical traction motor, a fuel cell and means for supplying the fuel cell with a combustion gas and an oxidizing gas, and has a load-bearing structure with longitudinal supports, characterized in that the electrical power generating system (1) contains a first module (2) with appliances at least for preprocessing and metering of the gases to be fed into the fuel cell and a second module (4) with the fuel cell, which fuel cell is connected to the first module (2) by mechanical coupling means for carrying the gases to be supplied to the fuel cell, for dissipating the reaction gases from the fuel cell, and for carrying at least one coolant via the fuel cell and by electrical coupling elements for the transmission of measured values from sensors, in that the first module (2) and the second module (4) are jointly mounted in a container (9) which can be inserted into a cavity (which is accessible from underneath the vehicle) in the vehicle, and can be attached to the longitudinal supports (24, 25) in the vehicle by means of at least four holders (21, 22) which are fitted to the container side walls, and in that an electrical power distribution module (15), which at least has distribution circuits with fuses and at least one switching element for switching the distribution circuits on and off, can be attached to a side wall of the container (9) and can be connected via coupling elements to the electrical outputs of the fuel cell and to cables to the electrical loads in the electrical vehicle.

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2. The arrangement as claimed in claim 1,  
characterized

in that the first module together with the appliances  
for preprocessing and metering of the gases to be fed  
5 into the fuel cell is arranged at the front (seen in  
the direction of travel of the electrical vehicle) of  
the container (9), and is screwed to the bottom (10) of  
the container (9).

10 3. The arrangement as claimed in claim 1 or 2,  
characterized

in that the second module (4) together with the fuel  
cell has a housing which contains the numerous  
individual fuel cells with electrical connections, and  
15 is connected to the container (9) by means of two  
screws (12) on the rear container bottom and via in  
each case one holder (13) on the left and right  
alongside the front face of the container (9).

20 4. The arrangement as claimed in at least one of the  
preceding claims,  
characterized

in that the electrical power distribution module (15)  
can be attached to a wall (16) on the outside of the  
25 container (9), which wall (16) is adjacent to the  
second module (4) and runs transversely with respect to  
the longitudinal supports (24, 25).

5. The arrangement as claimed in at least one of the  
30 preceding claims,  
characterized

in that at least two holders (21, 22) are provided on  
each of the two longitudinal faces of the container (9)  
and have guide pins (26) which can be pushed into holes  
35 in the longitudinal supports (24, 25) in the electrical  
vehicle, and in that the holders (21, 22) can be  
attached to the longitudinal supports (24, 25) by means  
of screws (23).

6. The arrangement as claimed in at least one of the preceding claims, characterized

5 in that the holders (21, 22) are designed such that they have movement restriction means, which restrict the movement of the container (9) relative to the longitudinal supports (24, 25), and allow such movement only in the event of an impact beyond a specific impact strength, and have energy absorption means for  
10 controlled transmission of kinetic energy from the container to the longitudinal supports (24, 25), with energy being at least partially dissipated.

7. A method for mounting and/or for installation of  
15 an electrical power generating system in an electrical vehicle which contains at least one electrical traction motor, a fuel cell and means for supplying the fuel cell with a combustion gas and an oxidizing gas, and has a load-bearing structure with longitudinal  
20 supports, characterized

in that a first module with appliances at least for preprocessing and metering of the gases to be fed into the fuel cell and a second module with the fuel cell  
25 are produced, in that the first and the second module are arranged in an apparatus and are then connected to one another by mechanical coupling elements which relate to lines for the substances to be supplied to the fuel cell and to be dissipated from it, to coolant  
30 routing for the fuel cell and to electrical coupling elements for signal transmission between the two modules, in that the modules which are connected to one another by means of the coupling elements are then mounted in a common container, in that the container is  
35 then inserted together with the modules into an electrical vehicle from underneath, into a cavity which is provided in this vehicle, and is attached to the longitudinal supports, in that a third module, which

contains an electrical connection for the electrical outputs of the fuel cell and electrical power distribution circuits with fuses for the connection of electrical loads and at least one switching element for  
5 switching the electrical power distribution circuits on and off, is then attached to the container externally on a side wall, in that the electrical connections are then made from the third module to the fuel cell and to loads in the electrical vehicle, and in that the first  
10 module (2) is then connected to a source for the combustion gas and to a channel for the air supply, and is connected by means of inputs and outputs to at least one cooling circuit in the electrical vehicle and to output line for the reaction products from the fuel  
15 cell.

8. The method as claimed in claim 7,  
characterized  
in that the gas preprocessing module is mounted by  
20 means of two screws (11) in the container (9) at the front - seen in the forward direction of travel of the vehicle.

9. The method as claimed in claim 7 or 8,  
25 characterized  
in that the fuel cell module is mounted by means of two screws in the rear part of the container bottom, and by means of two, in each case on one face of the module  
(9).

30 10. The method as claimed in at least one of the preceding claims,  
characterized  
in that the electrical power distribution module (15)  
35 is attached to that wall of the container which is adjacent to the module (4) with the fuel cell and runs transversely with respect to the longitudinal supports (24, 25).